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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICKY W. PURCELL and JEFFREY E. FISH

Appeal 2009-014038
Application 10/648,590
Technology Center 3700

Before STEVEN D.A. McCARTHY, STEFEN STAICOVICI and KEN B. BARRETT, *Administrative Patent Judges*.

McCARTHY, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 6, 7, 10-12, 14-16, 29-31, 34 and 36 under 35 U.S.C. § 103(a) as unpatentable over Dunshee (US 4,462,224, issued Jul. 31, 1984), Sabin (US 6,099,555, issued Aug. 8, 2000) and Avery (US 5,486,206, issued Jan. 23, 1996).

We AFFIRM.

The claims on appeal relate to "a cold pack that transfers heat from a human body when the cold pack is placed on or near the body." (Spec. 1, ll. 6-8). Claim 6 is illustrative of the claims on appeal:

> 6. A cold pack comprising:
>
> an enclosure;
>
> a solute within said enclosure;
>
> a liquid within said enclosure;
>
> a membrane segregating said liquid from said solute, wherein rupturing said membrane mixes said liquid with said solute to produce an endothermic solution within said enclosure; and
>
> a fibrous layer within said enclosure, said fibrous layer including fibers that retain said endothermic solution within said enclosure to spread said endothermic solution throughout the interior of said enclosure.

Independent claim 12 is similar, reciting instead of a fibrous layer:

> an absorbent core within said enclosure, said absorbent core being formed at least partially of fibers that retain said endothermic solution within said enclosure to spread said endothermic solution throughout the interior of said enclosure.

ISSUE

Appellants do not separately argue the dependent claims from the respective independent claims. (*See* App. Br. 9-15). Only issues and findings of fact contested by the Appellants will be addressed. *See Ex Parte Frye*, 94 USPQ2d 1072, 1075-76 (BPAI 2010). One issue is dispositive of the appeal:

Do the evidence and technical reasoning underlying the rejection of independent claims 6 and 12 adequately support the conclusion that the subject matter of those claims would have been obvious?

FINDINGS OF FACT

The record supports the following findings of fact ("FF") by a preponderance of the evidence.

1. We adopt and incorporate by reference the Examiner's findings starting at page 4, line 11 ("Regarding claims 6 and 12, Dunshee et al. disclose . . .") and ending at page 5, line 16 (". . . in order to increase gel viscosity and heat capacity, see abstract, col. 1-6 and figures 1-5.").

2. Dunshee describes a three-compartment, reusable cold pack *10*. (Dunshee, col. 3, ll. 18-21). When water in a compartment *18* is mixed with ammonium nitrate in a compartment *20*, heat is absorbed and a cooling effect is produced. When a gelling agent in the third compartment is mixed with the product of the reaction between the water and the ammonium nitrate, a gel is formed. (Dunshee, col. 4, ll. 48-56; col. 5, ll. 3-7, 17-18 and 61-62).

3. Sabin describes a two-compartment, self-cooling disposable gelling cold pack *1* which includes a disposable container. The disposable container includes a separator *7* which divides the disposable container into a first zone *8* and the second zone *9*. The first zone *8* contains a material such as water for generating cold. The second zone *9* contains a second material which interacts with the first material. Gelling agent *26* adheres to the second material to form a non-continuous coating. (Sabin, col. 10, ll. 4-16).

4. Sabin teaches that the first material is a liquid, such as water. The second liquid may be a solute soluble in water such as ammonium nitrate prills. Sabin teaches forming the non-continuous coating of the

gelling agent on the prills. (Sabin, col. 2, ll. 18-22; col. 3, ll. 29-33 and 38-42).

5. Sabin teaches using pregelatinized starch as a gelling agent. The starch swells, that is, absorbs water, when exposed. (Sabin, col. 5, ll. 11-17).

6. Avery describes a reusable thermal pack made of two portions, a gel bag or pad *12* having an outer shell made of a flexible membrane material and a pressure bag or chamber *14*. (Avery, col. 2, ll. 40-50).

7. Avery describes a flow retardant gel *20* within the gel pad *12* as a "semi-rigid colloidal dispersion of a solid with a liquid which retains heat or cold depending on the temperatures to which the pack *10* has been subjected." (Avery, col. 2, ll. 58-61).

8. Avery's flow retardant gel *20* includes a fibrous material. (Avery, col. 4, ll. 10-11). Avery teaches that "[i]t is the fibrous material that gives the gel its unique property of extremely low or negligible flow." (Avery, col. 4, ll. 38-39).

9. Avery teaches cooling the flow retardant gel *20* in the thermal pack by external means such as a heat exchanger *26*. (Avery, col. 3, ll. 49-56).

10. Avery teaches retaining heat or cold by means of flow retardant gel having a slow or negligible flow rate, or low motility rate and a higher heat capacity compared with conventional gels. (Avery, col. 3, l. 66 – col. 4, l. 2). "Consequently, the gel *20* will not migrate or flow from the pressure points or in response to gravity, thereby retaining more gel *20* over the desired area for a longer period of time than conventional gels." (Avery, col. 4, ll. 2-6). Avery also teaches that, "because of the increased heat

capacity of the gel *20*, a thermal pack incorporating such a gel retains its heating and cooling capacity for longer periods of time, thus making such a pad more convenient." (Avery, col. 4, ll. 6-9).

ANALYSIS

The Appellants contend that the reasons articulated by the Examiner for combining the teachings of Dunshee, Sabin and Avery are conclusory and inadequate to support the conclusion that the subject matter of claims 6 and 12 would have been obvious. (App. Br. 9-10; Reply Br. 4). Dunshee, Sabin and Avery describe similar structures. Once actuated, each structure includes a gel which is cooled to provide a low temperature source. (*See* FF 1-3 and 8). Avery teaches that adding fibers to the gel within a thermal pack is an improvement which both reduces the flow rate of the gel and increases the heat capacity of the gel. (FF 9). Avery teaches that reducing the flow rate of the gel and increasing the heat capacity of the gel improves the performance of the thermal pack. It would have been obvious to improve the cold pack of Dunshee and Sabin in a similar way. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007). That is, it would have been obvious:

> to mix the liquid (solvent), solute and gelling agent together as an alternative cooling modality and in order to provide a relatively conformable cooling device, and as further taught by Avery, to provide the gel with a fibrous material in order to increase gel viscosity and heat capacity.

(Ans. 5).

The improved device proposed by the Examiner would have met the limitations of claims 6 and 12. Nevertheless, the Appellants also argue that none of Dunshee, Sabin or Avery teaches or suggests the fibrous layer

recited in claim 6 or the absorbent core recited in claim 12. (App. Br. 8; Reply Br. 3-4). One technique for implementing the improvement proposed by the Examiner would have been to add fibers to the gelling agent in the cold pack of Dunshee and Sabin before the liquid or the liquid/solute solution came into contact with the gelling agent. With respect to the language of claim 6, the resulting dry mixture of gelling agent (e.g., starch) and fiber would have been a fibrous layer containing fibers within the enclosure of the un-actuated cold pack of Dunshee and Sabin. With respect to the language of claim 12, the Examiner correctly finds that the gelling agent (e.g., starch) would be an absorbent material, and the mixture of the gelling agent and fiber would form an absorbent core. (*See* Ans. 8-9; *cf.* FF 5 (Sabin describing the swellability of starch, a gelling agent)).

Furthermore, the presence of the fiber would have increased the resistance to movement of the gel formed after the liquid, solute and gelling agent interacted. The fiber, by reducing the motility of the gel, would have retained the solution. Therefore, the mixture of gelling agent and fiber would have been both a fibrous material as recited in claim 6 and an absorbent core as recited in claim 12.

The Appellants provide no persuasive reason why implementing the improvement proposed by the Examiner would have been beyond the level of ordinary skill in the art. Neither do Appellants provide a reason why the results of adding fiber to the gelling agent might have rendered the performance of the improved cold packs unpredictable.

The Appellants argue that Avery teaches away from the Examiner's proposed improvement because Avery teaches a thermal pack cooled without mixing materials. (Reply Br. 2). Avery does not appear to criticize

or disparage cold packs which use chemical interactions for cooling, however. Avery merely teaches a different method of cooling and does not teach away from the improvement proposed by the Examiner.

Finally, the Appellants argue that one of ordinary skill in the art would have been discouraged and led away from combining the teachings of Dunshee, Sabin and Avery because the cold packs of Dunshee and Sabin use one-time endothermic reactions to cool the gel in the devices, whereas Avery's thermal pack is reusable. (App. Br. 11; *see* FF 6). As the Examiner points out, the cold packs of Dunshee and Sabin (as well as cold packs subject to the improvement proposed by the Examiner) would have been reusable in the manner as Avery's thermal pack. Although the liquid/solute interactions in the cold packs of Dunshee and Sabin are one-time-only interactions, a user could have re-cooled the gels formed in the cold packs. Thus, the cold packs described by Dunshee and Sabin were reusable in the same sense as the thermal pack described by Avery. In view of this similarity, the Examiner correctly concluded that one of ordinary skill in the art would not have been discouraged from combining the teachings of Dunshee, Sabin and Avery in the fashion claimed in claims 6 and 12.

Since the Appellants do not argue the dependent claims separately from independent claims 6 and 12, we sustain the rejection of claims 6, 7, 10-12, 14-16, 29-31, 34 and 36 under § 103(a) as unpatentable over Dunshee, Sabin and Avery.

DECISION

We AFFIRM the Examiner's decision rejecting claims 6, 7, 10-12, 14-16, 29-31, 34 and 36.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(vi).

AFFIRMED

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